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Ecological Communities of Long Island, New York: Part 1

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INTRODUCTION

In recognition of the Long Island Botanical Society's 20th Anniversary it was thought that an article presenting a brief history and the current status of ecological community classification on Long Island would nicely complement recent articles in the LIBS Newsletter that focused on botany and rare plant discoveries (for example, Zaremba 2006).

Compared to traditional species taxonomy, ecology and the classification of natural communities are relatively new to the realm of natural sciences. Natural communities have been described from Long Island for nearly as long as plant species. The earliest reports of natural communities on Long Island can be traced back to the European settlement and exploration of New York (Denton 1670). The eventual distribution of interacting plants and animals on Long Island can be traced even further back in its geologic history driven by the glacial advance and retreat. Long Island's geologic history, its proximity to the ocean, and its position within the temperate climate have combined to support the vegetation we observe today. Throw in a few hurricanes, wild fires, floods, and human activity, and these dynamic forces result in the plant associations observed through time.

Natural community classifications have proven to be important conservation tools throughout the world because (1) communities provide important ecosystem functions that are worth conserving (e.g., groundwater recharge, flood water retention, provide wildlife habitat, etc.); (2) they serve as coarse filters to protect common and rare species (i.e., many species may be protected by protecting the natural communities in which they live); and (3) they can be used as surrogates in areas where little is known about ecological processes and species distribution (Grossman *et al.* 1998). The conservation of high quality examples of the natural communities on Long Island assures the protection of most of the species that make up the biological diversity of this part of the state.



Photo by Steve Young

Coastal plain pond at Linus Pond.

HISTORICAL BACKGROUND

Early accounts of the vegetation of Long Island can be found intermixed with the other more frequent topics of botany and natural history of the region. One of the earliest descriptions of natural communities on Long Island was written by Winslow C. Watson (1860) whose opening sentence reads: "The subject of the waste lands of Long Island has, for several years, engaged my earnest attention." The balance of his article offers evidence that attempts to convince readers that "The Hempstead Plain" and "The Bush Plain" contain soils and climate suitable for successful agriculture. He was trying to dispel the widely held belief that the soils of Long Island were unproductive. Watson provides a good word picture of what present day ecologists would call Hempstead Plains grassland and pitch pine-scrub oak barrens (Reschke 1990, Edinger *et al.* 2002). He also provides the earliest assessment of the size of these natural areas: The Hempstead Plain—64 square miles (Denton 1670) reduced to 12,000 acres in 1860; The

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Long Island Botanical Society

Founded: 1986
Incorporated: 1989

The Long Island Botanical Society is dedicated to the promotion of field botany and a greater understanding of the plants that grow wild on Long Island, New York.

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www.libotanical.org

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Society News

To celebrate LIBS's 20th Anniversary, 18 LIBS members are enjoying a botanical field trip to Newfoundland (July 5-15). We look forward to a report of their adventure in the next issue of the LIBS Newsletter.

Andy Greller will represent LIBS in the Nassau Citizens for Clean Water and Open Space, a group that also includes The Nature Conservancy, the North Shore Land Alliance, and the Pine Barrens Society.

Rich Kelly wrote the lead article for the recent edition of the SOFO Naturalist: "*Tipularia discolor* and Other Things I Can't Find on the South Fork."

Karen Blumer is working on a handbook for site restorations and would like to know of other people who are restoring places with native plants.

Elsa l'Hommedieu wrote from California that she is just now going out in her camper to explore the American River Valley, the Feather River, and Yuba River where she expects to see "some good stuff." She sent greetings to the membership. Elsa is 85 and travels alone in her camper to anywhere the flowers are!

Graduate student Kelly O'Donnell is looking for a local botanist to help her identify *Amaranthus* and *Chenopodium* in the field for a few days as she begins her summer project.

Marilyn Jordan asks that new finds of invasive species be reported to her at mjordan@tnc.org.

John Potente will present a talk on carnivorous plants of Long Island on September 13 at 7 p.m. at the Islip Public Library as part of the Seatuck Environmental Association's *Celebrating Nature* lecture series. Call Seatuck at 631-581-6908 for more information.

A message from Tom Rawinski, USFS:

European gray willow (*Salix cinerea*) is everywhere! Well, maybe not everywhere, but it's probably in every county in New England and New York. I know it is extant in 19 New England counties and three New York counties. This horse is already out of the barn!

European gray willow has been a remarkably successful stealth invader (because few of us botanists wanted to, or could, key it out). Most notably, it is the prevalent willow sharing coastal plain pond shore habitats with state and globally rare plant species. Anyone managing wetlands should learn to identify the plant.

In a nutshell, here's how: The branchlets and leaf undersides are persistently whitish puberulent (covered with fine hairs). Peel back the bark on a quarter-inch or larger diameter branch and the decorticated wood will show a number of elevated narrow ridges. For many good images of the plant go to Google Images.

Incidentally, most of the occurrences occupy disturbed sites, such as moist road edges, reservoir shores, excavation bottoms, wet pastures, etc. It grows on upland as well as wetland sites. Please check your special habitats for this species and control it where necessary. And let us all know what you find.

Thanks.

Tom can be reached at trawinski@fs.fed.us or 603-868-7642.

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Bush Plain or “Long Island barrens”—about 258 to 344 square miles, but the vegetation descriptions are wanting and use ambiguous common names (e.g., “low shrubby bushes” and “secretary grass”).

Almost 40 years later Smith Ely Jelliffe published *The Flora of Long Island* (Jelliffe 1899) and the introduction includes a section on Pine Barren Flora with a list of “the most important of these pine barren plants” using scientific names. This is similar to the format currently used by NY Natural Heritage in writing community classification descriptions (Reschke 1990, Edinger *et al.* 2002). He also provides a short description of the vegetation of the northern part of Long Island.

During the early 1900s a prolific writer and botanist by the name of Roland M. Harper published several articles that documented the structure and composition of several Long Island natural communities, such as Atlantic white cedar swamp (Harper 1907), pine barrens (Harper 1908a, 1908b), Hempstead Plains grassland (Harper 1911, 1912, 1915, 1918), and the natural vegetation of western Long Island south of the terminal moraine (Harper 1917). A footnote in the last article provides an interesting explanation of the difference between “flora” and “vegetation.” An abridged excerpt follows:

The relation between flora and vegetation is much like that between...dictionaries and literature. Dictionaries are useful and well-nigh indispensable, but one does not need to know every word in the dictionary

before producing any literature, and if all writers made revising the dictionary their chief aim we would not have much literature. Likewise one does not have to know all the plants of a region before describing its vegetation, and if all botanists were taxonomists primarily it would be difficult to get any information about the aspect of the vegetation in a region one had not visited. (Harper 1917).

This philosophy led to the first ecological study that attempted to apply methods of “Plant Sociology” to the description of the vegetation of Long Island titled, “The plant associations of central Long Island” by Henry S. Conard (1935). Conard presents detailed information on the geography, geology, climate, soils, and human activity that influence the observed vegetation patterns throughout central Long Island. Conard adopted the “plant association” as the fundamental unit of vegetation. The association is defined by its characteristic combination of species (i.e., a list of species and their role, function, and position in the community). Most interestingly, when it came to naming associations, Conard followed the custom of attaching the termination-*etum* to the root word of an important genus of the association. This noun is followed by the specific name in the proper case, or by an adjective or another important genus in the association. For example, black oak dominated forests become the *Quercetum velutinae* asso-

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Some Terms and Concepts Used in This Study

Associations: 1. a group of plants of one or more species living together under uniform environmental conditions and having a uniform and distinctive aspect. 2. the finest level of the hierarchy used in the National Vegetation Classification System (Grossman *et al.* 1998) and the basic unit for vegetation classification in North America. It is defined as a plant community type of definite floristic composition, uniform habitat conditions, and uniform physiognomy.

Community: an assemblage of plants and animals interacting with one another, occupying a habitat, and often modifying the habitat; a variable assemblage of plant and animal populations sharing a common envi-

ronment and occurring repeatedly in the landscape (Reschke 1990, Edinger *et al.* 2002).

Ecological Systems: recurring groups of biological communities that are found in similar physical environments and are influenced by similar dynamic ecological processes, such as fire or flooding. They are intended to provide a classification unit that is readily mappable, often from remote imagery, and readily identifiable by conservation and resource managers in the field, such as Northern Atlantic Coastal Plain Pitch Pine Barrens (NatureServe). <http://www.natureserve.org/getData/USecologyData.jsp>

Ecology: the study of the interrelationships between living or-

ganisms and their environment.

Ecosystem: an ecological community of various plants, animals, and other organisms, interacting with each other and with the nonliving resources in their environment, all functioning as a unit. This term is sometimes used interchangeably with community, but generally the concept of ecosystem is larger in scale than that of community (e.g., pine barrens ecosystem versus dwarf pine barrens community).

Habitat: a place or type of place where an organism, population, or community lives. For example, plant field guides often provide the common habitat for each species, such as “dry sandy woods” or “moist meadows.”

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ciation, Hempstead Plains grasslands become the *Andropogonetum Hempsteadii* association, and red maple swamps become either the *Aceretum rubri* association or the *Aceretum Osmundaceum* association depending on the setting. For better or worse, this system of naming associations using binomial nomenclature was not widely accepted. Although it is interesting to note that Conard's system was followed by at least one loyal practitioner (Cain 1937, Cain and Penfound 1938).

A concise account of the history of describing and documenting vegetation types on Long Island can be found in Irwin M. Brodo's book *The Lichens of Long Island, New York: A Vegetational and Floristic Analysis* (Brodo 1968). In addition to Conard's 1935 work, Brodo notes others who have contributed to our understanding of Long Island's vegetation, such as the north shore oak forests (Harper 1917, Cain 1936), pine barrens (Watson 1860, Britton 1880, Harper 1908a, 1908b, Clute 1897), maritime heathlands or "downs" (Taylor 1923), sand dunes (Brodo 1961), cedar swamps (Bicknell 1908, Harper 1907, Taylor 1916), red maple swamps (Cain and Penfound 1938), and the Hempstead Plains (Hicks 1892, Bryson 1897, Kirby 1905, Harper 1911, 1912, 1915, 1918, Ferguson 1925, Cain *et al.* 1937). In addition to the types noted by Brodo (1968) there are numerous site-specific floras that were mined for vegetation descriptions, such as "The June flora of a Long Island swamp" by Anna Murray Vail (1895), and various salt marsh studies (Conard 1924, Taylor 1938, 1939, Johnson and York 1912, 1915). The publishing of site-specific floras and vegetation studies continues up until today. Over the years, NY Natural Heritage has greatly benefited from these studies and the steady flow of new information on Long Island's natural communities from dedicated researchers. Limited space prevents the inclusion of an exhaustive list here, but some notable contributors to the Long Island portion the state community classification include Henry Art, Eric E. Lamont, Robert E. Zaremba, Ralph Good, Norma Good, Andrew M. Greller, Marilyn J. Jordan, Linda S. Olsvig, and Richard Stalter (Good and Good 1970, Art 1976, Greller 1977, 2001, Greller *et al.* 1978, Olsvig *et al.* 1979, Greller *et al.* 1982, Stalter *et al.* 1986, Stalter and Lamont 1987, 2002, Lamont and Stalter 1991, Zaremba and Lamont 1993, Jordan *et al.* 2003).

Andrew M. Greller published a classification that described twelve mature forest types based on an extensive literature review and field surveys (Greller 1977, 2001). Andy provided detailed descriptions with characteristic species and a dichotomous key to the types, which included forested uplands and wetlands. Later this article was frequently cited by NY Natural Heritage

ecologist David M. Hunt in the process of describing the various "coastal oak-" (e.g., coastal oak-heath forest, coastal oak-hickory forest, etc.) and "maritime" forests, as well as the forested swamps (Edinger *et al.* 2002).

In 1979, a milestone in wetland classification was published by the U.S. Fish and Wildlife Service: *The Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin *et al.* 1979). This book presents the System and Subsystem hierarchy adopted by the NY Natural Heritage Program (Reschke 1990) and still in use today (Edinger *et al.* 2002). Cowardin *et al.* (1979) defined the following Systems: Marine, Estuarine, Riverine, Lacustrine, Palustrine. A list of these Systems along with the Terrestrial System and the Subsystems (modified by NY Natural Heritage) is published beginning on page 27.

This brings us to the founding of the NY Natural Heritage Program in 1985 and its first ecologist, Carol Reschke. The mission of NY Natural Heritage is to enable and enhance conservation of rare animals, rare plants, and significant natural communities. The botanist and zoologist had a bit of a head start in fulfilling this mission, with published taxonomic keys and species descriptions in hand; however, the ecologist lacked an equivalent statewide community classification to help decide what to inventory. The first edition of *Ecological Communities of New York State* (Reschke 1990) was published in 1990 and quickly became the primary source for community classification in the state. Its success and acceptance by a wide range of users was driven by its lofty goal to be an all-inclusive classification intending to fulfill a long-standing need. *Ecological Communities of New York State* remains the only classification in the northeast that includes a comprehensive treatment of cultural communities along with the natural types. This allows users of this classification to describe and map nearly any ecological community encountered in the state. It is impressive to see how much of the first edition has remained unchanged in the later versions (Edinger *et al.* 2002). This attests to the fact that *Ecological Communities of New York State* was thoroughly researched and ahead of its time. The NY Natural Heritage Program was very fortunate to have had a published classification to build upon.

Gregory J. Edinger is the program ecologist for the New York Natural Heritage Program.

EDITORS NOTE: Part 2 of this article, to be published in October 2006, will cover the mapping of Long Island Natural Communities, and the current state of Community Classification on Long Island.

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REFERENCES

- Art, Henry (1976) Ecological studies of the Sunken Forest, Fire Island National Seashore, NY. US Natl Park Serv. Sci Monogr Ser, No. 7.
- Bicknell, Eugene P. 1908. The white cedar swamp in western Long Island. *Torrey* 8:27-28.
- Britton, N.L. 1880. On the northward extension of the New Jersey pine barrens flora on Long and Staten Islands. *Bulletin of the Torrey Botanical Club* 7:81-83.
- Brodo, Irwin M. 1961. A study of lichen ecology in central Long Island, New York. *Amer. Midland Natur.* 65:290-310.
- Brodo, Irwin M. 1968. The lichens of Long Island, New York: a vegetational and floristic analysis. Bulletin Number 410. New York State Museum and Science Service. Albany, NY.
- Bryson, John. 1897. The Hempstead Plains. *American Geol.* 20:61-65.
- Cain, Stanley A. 1936. The composition and structure of an oak woods, Cold Spring Harbor, Long Island, with special attention to sampling methods. *Amer. Midland Natur.* 17:725-740.
- Cain, Stanley A., M. Nelson and W. McLean 1937. *Andropogonetum hempsteadii*: a Long Island grassland vegetation type. *Amer. Midland Nat.* 18:334-350.
- Cain, Stanley A. and William T. Penfound. 1938. *Aceretum rubri*: the red maple swamp forest of central Long Island. *Amer. Midland Nat.* 19:390-416.
- Clute, Willard N. 1897. Some sand-barren plants (of the Shinnecock hills). *Plant World* 1:11-12.
- Conard, Henry S. 1924. Second survey of the vegetation of a Long Island salt marsh. *Ecology* 5:379-388.
- Conard, Henry S. 1935. The plant associations of central Long Island. *Amer. Midland Nat.* 16:433-516.
- Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. Office of Biological Services, Fish and Wildlife Service, U.S. Dept. of Interior, Washington, D.C.
- Denton, Daniel. 1670. A brief description of New-York: formerly called New-Netherlands. Printed for John Hancock, at the first Shop in Popes-Head-Alley in Cornhil at the three Bibles, and William Bradley at the three Bibles in the Minories, London, England.

Internet Sources for Natural Community and Vegetation Classification Information

New York Natural Heritage Program
<http://nynhp.org>

Ecological Communities of New York State
(Edinger *et al.* 2002, Reschke 1990)
<http://www.dec.state.ny.us/website/dfwmr/heritage/ecology.htm>

NatureServe
<http://www.natureserve.org/>

International Vegetation Classification System
<http://www.natureserve.org/explorer/>

Edinger, Gregory J., D.J. Evans, S. Gebauer, T.G. Howard, D.M. Hunt, and A.M. Olivero (editors). 2002. Ecological Communities of New York State. Second Edition. A revised and expanded edition of Carol Reschke's *Ecological Communities of New York State*. (Draft for review). New York Natural Heritage Program, New York State Department of Environmental Conservation, Albany, NY.

Ferguson, William C. 1925. Ferns and flowering plants of the Hempstead Plains, Long Island, New York. *Torrey* 25:109-113.

Good, Ralph E., and Norma F. Good. 1970. Vegetation of the sea cliffs and adjacent uplands on the north shore of Long Island, New York. *Bulletin of the Torrey Botanical Club* 97:204-208.

Greller, Andrew M. 1977. A classification of mature forests on Long Island, New York. *Bulletin of the Torrey Botanical Club* 104(4):376-382.

Greller, Andrew M. 2001. Outline of a revised classification for mature forests and related woody vegetation on Long Island, NY. *Long Island Botanical Society Newsletter* 11:16-17, 33-34; 12:10.

Greller, Andrew M., James M. Mansky, and Robert E. Calhoon. 1982. An oak, hickory-dogwood forest on central Long Island, New York. *Bulletin of the Torrey Botanical Club* 109(2):219-225.

Greller, Andrew M., Robert E. Calhoon, and James M. Mansky. 1978. Grace Forest, a mixed mesophytic stand on Long Island, New York. *Bot. Gaz.* 139(4):482-489.

Grossman D.H., D. Faber-Langendoen, A.S. Weakley, M. Anderson, P. Bourgeron, R. Crawford, K. Goodin, S. Landaal, K. Metzler, K.D. Patterson, M. Pyne, M. Reid, and L. Sneddon. 1998. International classification

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of ecological communities: terrestrial vegetation of the United States. Volume I, The National Vegetation Classification System: development, status, and applications. The Nature Conservancy: Arlington, VA.

Harper, Roland M. 1907. A Long Island cedar swamp. *Torreya* 7:198-201.

Harper, Roland M. 1908a. Notes on the pine-barrens of Long Island (Abstract of a paper read before the Torrey Botanical Club December 10, 1907). *Torreya* 8:33-34.

Harper, Roland M. 1908b. The pine barrens of Babylon and Islip. *Torreya* 8:1-8.

Harper, Roland M. 1911. The Hempstead Plains. A natural prairie on Long Island. *Bul. Amer. Geogr. Soc.* 43:351-360.

Harper, Roland M. 1912. The Hempstead plains of Long Island. *Torreya* 12:277.

Harper, Roland M. 1915. Hempstead Plains. *New Inter. Encyc.* 2nd ed. 11:133.

Harper, Roland M. 1917. The natural vegetation of western Long Island, south of the terminal moraine. *Torreya* 17:1-13.

Harper, Roland M. 1918. The vegetation of the Hempstead Plains. *Mem. Torrey Bot. Club* 17:262-286.

Hicks, Henry. 1892. The vegetation of Hempstead Plains. Unpublished manuscript at Cornell University and at the Brooklyn Botanic Garden.

Jelliffe, Smith Ely. 1899. The flora of Long Island. The New Era Printing Company, Lancaster, PA.

Johnson, Duncan S. and H. H. York. 1912. The relation of plants to tide levels. A study of the distribution of marine plants at Cold Spring Harbor. *John Hopkins Univ. Circ.* 1912:116 (February).

Johnson, Duncan S. and H. H. York. 1915. The relation of plants to tide levels. *Carnegie Inst. Pub.* 206:113-121.

Jordan, Marilyn J., W.A. Patterson III, and A.W. Windisch. 2003. Conceptual ecological models for the Long Island pitch pine barrens: implications for managing rare plant communities. *Forest Ecology and Management* 185:151-168.

Kirby, James. 1905. Some plants of the Hempstead plains. *Amer. Bot.* 7:110.

Lamont, Eric E. and Richard Stalter. 1991. The vascular flora of Orient Beach State Park, Long Island, New York. *Bulletin of the Torrey Botanical Club* 118(4):459-468.

Olsvig, L. S., J. F. Cryan, and R. H. Whittaker. 1979. Vegetational gradients of the pine plains and barrens of Long Island, New York. pp. 265-282, in: Forman, R. T. Pine Barrens: Ecosystem and Landscape. Academic Press, New York. 601 pp.

Reschke, Carol. 1990. Ecological Communities of New York State. New York State Department of Environmental Conservation, New York Natural Heritage Program. Latham, NY.

Stalter, Richard and Eric E. Lamont. 1987. Vegetation of Hempstead Plains, Mitchell Field, Long Island, New York. *Bulletin of the Torrey Botanical Club* 114(3):330-335.

Stalter, Richard., Eric E. Lamont, and James Northup. 1986. Vegetation of Fire Island, New York. *Bulletin of the Torrey Botanical Club* 113(3):298-306.

Stalter, Richard and Eric E. Lamont. 2002. Vascular flora of Jamaica Bay Wildlife Refuge, Long Island, New York. *Journal of the Torrey Botanical Society* 129(4):346-358.

Taylor, Norman. 1916. A white cedar swamp at Merrick, Long Island, and its significance. *Mem. N.Y. Bot. Gard.* 6:79-88.

Taylor, Norman. 1923. The vegetation of Long Island. *Brooklyn Bot. Gard. Mem.* 2:1-107.

Taylor, Norman. 1938. A preliminary report on the salt marsh vegetation of Long Island. *N.Y. State Mus. Bul.* 316:21-84.

Taylor, Norman. 1939. Salt tolerance of Long Island salt marsh plants. *New York State Museum Circ.* 23:1-42 Figs. 1-19 (November).

Thompson, John E. 1997. Ecological communities of the Montauk Peninsula, Suffolk, County, New York. The Nature Conservancy, Long Island Chapter, Cold Spring Harbor, NY.

Vail, Anna Murray. 1895. The June flora of a Long Island swamp. *Gard. For.* 8:282-283.

Watson, Winslow C. 1860. The plains of Long Island. C. Van Benthuysen, Albany, NY.

Zaremba, Robert E. 2006. Continuing botanical traditions on Long Island: 1984-1985. *Long Island Botanical Society Newsletter* 16(2):16-19.

Zaremba, Robert E. and Eric E. Lamont. 1993. The status of the Coastal Plain pondshore community in New York. *Bulletin of the Torrey Botanical Club* 120(2):180-187.

An Annotated List of the Ecological Communities of Long Island, New York

The following list is a subset of the communities described by NY Natural Heritage (Edinger *et al.* 2002) that are known or suspected to occur on Long Island. Cultural communities are included, but are not tracked by NY Natural Heritage. About 87 (50%) of the 174 natural communities described by NY Natural Heritage occur on Long Island. Out of the 1,709 natural community element occurrences currently documented by NY Natural Heritage, 247 (14%) are on Long Island.

= number of Long Island occurrences in NY Natural Heritage Biotics database as of June 1, 2006.

0 = definitely occurs on Long Island, but there are no occurrences in the NY Natural Heritage Biotics database as of June 1, 2006.

? = uncertain if this community occurs on Long Island.

I. MARINE SYSTEM

A. MARINE SUBTIDAL

1. Marine deepwater community – 0
2. Marine eelgrass meadow – 1

B. MARINE INTERTIDAL

1. Marine intertidal mudflats – 0
2. Marine intertidal gravel/sand beach – 0
3. Marine rocky intertidal – 4

C. MARINE CULTURAL

1. Marine submerged artificial structure/reef
2. Marine dredge spoil shore
3. Marine riprap/artificial shore

II. ESTUARINE SYSTEM

A. ESTUARINE SUBTIDAL

1. Tidal river – 0
2. Saltwater tidal creek – 4
3. Freshwater tidal creek – 0
4. Brackish subtidal aquatic bed – 0
5. Freshwater subtidal aquatic bed – 0

B. ESTUARINE INTERTIDAL

1. Brackish meadow – 2
2. Salt shrub – 2
3. High salt marsh – 9
4. Salt panne – 4
5. Low salt marsh – 7
6. Coastal salt pond – 7
7. Brackish interdunal swales – 3
8. Brackish tidal marsh – 2
9. Brackish intertidal mudflats – 0
10. Brackish intertidal shore – 1
11. Freshwater tidal swamp – ?
12. Freshwater tidal marsh – 1
13. Freshwater intertidal mudflats – 0

C. ESTUARINE CULTURAL

1. Estuarine submerged structure
2. Estuarine water chestnut bed
3. Estuarine channel/artificial impoundment
4. Estuarine ditch
5. Estuarine impoundment marsh
6. Estuarine reedgrass marsh
7. Estuarine dredge spoil shore
8. Estuarine riprap/artificial shore

III. RIVERINE SYSTEM

A. NATURAL STREAMS

1. Marsh headwater stream – 0
2. Confined river – ?
3. Intermittent stream – 0
4. Coastal plain stream – 0
5. Spring – 0

B. RIVERINE CULTURAL

1. Riverine submerged structure
2. Riverine water chestnut bed
2. Acidified stream
3. Canal
4. Ditch/artificial intermittent stream
5. Industrial effluent stream

IV. LACUSTRINE SYSTEM

A. NATURAL LAKES AND PONDS

1. Oligotrophic dimictic lake – 0
2. Coastal plain pond – 4
3. Oligotrophic pond – ?
4. Eutrophic pond – 0

B. LACUSTRINE CULTURAL

1. Lacustrine submerged structure
2. Lacustrine water chestnut bed
3. Acidified lake
4. Cultural eutrophic lake
5. Farm pond/artificial pond
6. Reservoir/artificial impoundment
7. Quarry pond
8. Artificial pool
9. Industrial cooling pond
10. Sewage treatment pond

V. PALUSTRINE SYSTEM

A. OPEN MINERAL SOIL WETLANDS

1. Deep emergent marsh – 0
 2. Shallow emergent marsh – 0
 3. Shrub swamp – 0
 4. Inland noncalcareous lake shore – ?
 5. Coastal plain pond shore – 60
 6. Maritime freshwater interdunal swales – 5
 7. Pine barrens vernal pond – 0
 8. Pine barrens shrub swamp – 4
- #### B. OPEN PEATLANDS
1. Sedge meadow – 0
 2. Coastal plain poor fen – 6
 3. Sea level fen – 6
 4. Highbush blueberry bog thicket – 4

C. FORESTED MINERAL SOIL WETLANDS

1. Floodplain forest – ?
2. Red maple-hardwood swamp – 1
3. Red maple-black gum swamp – 8
4. Red maple-sweetgum swamp – 1
5. Vernal pool – 0

6. Hemlock-hardwood swamp – ?

D. FORESTED PEATLANDS

1. Coastal plain Atlantic white cedar swamp – 4

E. PALUSTRINE CULTURAL

1. Reverted drained muckland
2. Impounded marsh
3. Impounded swamp
4. Reedgrass marsh
5. Purple loosestrife marsh
6. Dredge spoil wetland
7. Mine spoil wetland
8. Water recharge basin

VI. TERRESTRIAL SYSTEM

A. OPEN UPLANDS

1. Sand beach – 0
2. Maritime beach – 7
3. Maritime dunes – 8
4. Maritime shrubland – 5
5. Maritime heathland – 3
6. Maritime grassland – 8
7. Hempstead Plains grassland – 1
8. Riverside sand/gravel bar – ?
9. Maritime bluff – 1
10. Successional fern meadow – ?
11. Successional blueberry heath – ?
12. Successional northern sandplain grassland – 0
13. Successional old field – 0
14. Successional shrubland – 0

B. BARRENS AND WOODLANDS

1. Dwarf pine plains – 1
2. Maritime pitch pine dune woodland – 4
3. Pitch pine-scrub oak barrens – 3
4. Pitch pine-oak-heath woodland – 9
5. Successional red cedar woodland – 0

C. FORESTED UPLANDS

1. Maritime post oak forest – 4
2. Maritime beech forest – 3
3. Maritime holly forest – 1
4. Maritime red cedar forest – 2
5. Coastal oak-heath forest – 6
6. Coastal oak-hickory forest – 7
7. Coastal oak-beech forest – 5
8. Coastal oak-laurel forest – 2
9. Coastal oak-holly forest – 1
10. Pitch pine-oak forest – 12
11. Appalachian oak-hickory forest – 0
12. Oak-tulip tree forest – 2
13. Appalachian oak-pine forest – 0

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14. Hemlock-northern hardwood forest – 0

15. Successional northern hardwoods – 0

16. Successional southern hardwoods – 0

17. Successional maritime forest – 2

D. TERRESTRIAL CULTURAL

1. Cropland/row crops

2. Cropland/field crops

3. Pastureland

4. Flower/herb garden

5. Orchard

6. Vineyard

7. Hardwood plantation

8. Pine plantation

9. Spruce/fir plantation

10. Conifer plantation

11. Mowed lawn with trees

12. Mowed lawn

13. Mowed roadside/pathway

14. Herbicide-sprayed roadside/pathway

15. Unpaved road/path

16. Railroad

17. Paved road/path

18. Roadcut cliff/slope

19. Riprap/erosion control roadside

20. Rock quarry

21. Gravel mine

22. Sand mine

23. Brushy cleared land

24. Artificial beach

25. Riprap/artificial lake shore

26. Dredge spoil lake shore

27. Construction/road maintenance spoils

28. Dredge spoils

29. Mine spoils

30. Landfill/dump

31. Junkyard

32. Urban vacant lot

33. Urban structure exterior

34. Rural structure exterior

35. Interior of barn/agricultural building

36. Interior of nonagricultural building

VII. SUBTERRANEAN SYSTEM

A. NATURAL CAVES

B. SUBTERRANEAN CULTURAL

1. Mine/artificial cave community

2. Sewer

3. Tunnel

4. Basement/building foundation

A Swamp Forest Complex with Siberian Elm at the Southern End of Willow Lake, Flushing Meadows Park, Queens County

Andrew Greller, Eric Morgan and Jon Sperling

Flushing Meadows Park (FMP) was the site of the iconic 1939 World's Fair. As such, the area was transformed by Robert Moses, then NYC Parks Commissioner, from a smoldering ash dump (the inspiration for "The Valley of Ashes" in *The Great Gatsby*) to a landscaped park that included two artificial lakes, Meadow (north) and Willow (south). He built a complex of roadways and streets, so that the Park was bounded on the south and west by Grand Central Parkway, on the north by Horace Harding Boulevard, and by Park Drive East. Nevertheless, before the area was so transformed there was a rich and rare (for Long Island) natural flora and vegetation, ranging from brackish marshes at the mouth of Flushing Creek through freshwater marshes to swamp forest and streams at the south end. Monachino (1938) reported 318 plants from the World's Fair site. Ferguson (1924) noted an American elm swamp forest at Train's Meadow in what is now the area from Jackson Heights to LaGuardia Airport, and a few miles from FMP. *Ulmus americana* was listed as dominant; *Quercus bicolor* and *Acer rubrum* were listed as common, and *Fraxinus pennsylvanica* as occasional.

It was with great interest, therefore, that one of us (AMG) determined the presence of an elm forest at the southern tip of Willow Lake, the limit of FMP (Fig. 1, map; Fig. 2, photo). In April, the trees can be identified as elms by the abundance of winged fruits that clothe the upper branches and paint them a chartreuse color. That swamp forest is inaccessible to the public because it is within the fortified fences of a NYC Department of Transportation rail yard, for the maintenance of subway cars. One of us (EM) is an employee of NYC Natural Resources Group, so we easily were



Fig. 1. Aerial map of Flushing Meadow Park, Queens.

able to gain admission to the grounds. We found a forest approximately 20 m tall covering a few acres. By far the largest portion of the wooded area (Fig. 1 map section I) was occupied by Siberian elms (*Ulmus pumila*). Beneath the elms was a uniform understory (≤ 3 m) of shrub honeysuckle (*Lonicera maackii*). The floor of this exotic forest was devoid of plant life. Trash was scattered throughout the area.

Further exploration of the forest revealed a difference in substrate composition. The soil beneath the Siberian elm/shrub honeysuckle forest appeared to have been dumped there as fill. It was the yellowish soil common in the ground moraine of northern Queens

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(Haven Loam, formerly known as "Miami Stony Loam"). Small boulders of diverse provenance were evidence of its origin as till. Walking west southwest, we came to a drop-off of a foot or so, where the soil was uniformly fine-textured, suggesting an alluvial origin. This low, apparently unfilled area, had most of the largest trees. Here, in this relatively small section (Fig. 1, map section III) we found large specimens of five species of oak: *Quercus bicolor*, *Q. palustris*, *Q. phellos*, *Q. rubra*, and *Q. velutina*; also American elm, *Ulmus americana*. All of these species are characteristic of northeastern swamp forests, with the exception of black oak. Smaller trees in section III were: *Liquidambar styraciflua*, *Prunus serotina*, *Cornus mas*, and *Rhamnus* cf. *frangula*. We found a number of red oak saplings in this section. Willow oak (*Q. phellos*) is not known from mature stands on Long Island today, although it is present in all size classes in southern Staten Island (AMG, personal observation). While it is possible that the willow oak specimen was planted by Robert Moses when he constructed the parkway system for the 1939 World's Fair, that species has been reported historically for Queens County (Jelliffe 1899).

We then walked the length of section III, moving west, and reached another filled area. Here the ground was higher, approximately two or three feet above section III. We designated this smallest unit, II (Fig. 1, map section II). The substrate contained chunks of asphalt. The soil matrix was unrecognizable but probably derived in part from till and perhaps from alluvium removed from an adjacent water-filled depression (sump or pond). Section II was dominated by some medium-sized red oaks that appear to have been planted in a row along the fence of the access road to the NYC DOT



Photo by Andrew M. Greller

Fig. 2. *Ulmis pumila* swamp forest from south.

parking lot. *Ailanthus* and *Morus alba* were the only other abundant trees here. The bryoflora of the area was depauperate, yet one of us (JS) uncovered from under the leaf litter an interesting moss, *Phascum cuspidatum* Hedw. (Pottiaceae). This bryophyte features a stemless sporophyte.

REFERENCES

- Ferguson, W.C. 1924. Contributions to the flora of Long Island, N.Y., second paper.
Bulletin of the Torrey Botanical Club 51:177-201.
Jelliffe, S.E. 1899. *The Flora of Long Island*. Lancaster (privately printed). xvi+163 pp.
Monachino, J. 1938. Trip of July 9 (1938) to the World's Fair region. *Torreya* 38:156-157.

LIBS Online Donald House

Several years ago Eric Lamont, no doubt under the delusion that my dabbling in digital photography and use of PowerPoint meant I was a "techie," approached me about maintaining the Long Island Botanical Society's Web site. Actually, LIBS already had a Web site, which was on a server at SUNY Stony Brook. However, our contact had moved from the area and it had become neglected. We didn't even have access to it anymore, hence the need to make a new start. Although I was coming under the increasing conviction that I should make a contribution to LIBS, I was uncertain as to whether or not I could do this. I knew almost nothing about HTML. I would peek at the source code of Web pages once in a while and believed that I could fig-

ure it out, but this is far from actually doing it. I told him my concerns. He said that we would get someone else to build it and that I need only maintain it. I said that I would think about it and let him know at the next meeting. Before the end of the night, I told him I would do it. As luck would have it, shortly after accepting Eric's invitation, my employer decided they needed a webmaster and chose to train me, apparently under the same delusion that I was a "techie."

I met with Eric and Skip Blanchard several months later. Eric and Skip chose Jenn Blanchard, Skip Blanchard's niece, who was trained in Web site construction, to build the site. She would do the initial

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maintenance and, as I became proficient in HTML, I would take over. An archaeological investigation of my e-mail folder leads me to believe that I took over maintenance of the LIBS site some time in October 2004.

For those who have not visited the site, the Web address is www.libotanical.org. The main page has our statement of purpose, news, and, of course, a menu linking to the rest of the site. The site contains a sample from the *Flora Atlas of Long Island* (which may one day be available online), membership and contact information. The two pages I use most frequently are the "Field Trips" and "Programs" pages. Ever the slob, I am always mislaying my hardcopy of the LIBS Newsletter. All the information about our field trips and programs are here, often before the Newsletter comes out. I try to post field trips and programs (for which we have in-

complete information from the monthly meeting minutes) well in advance of the Newsletter. Last fall we planned a trip after the Newsletter came out. I was able to post it on the site two weeks beforehand. Meeting changes and cancellations have also been posted. The links page has a collection of links to botanical sites and sites of authorities that administrate local natural areas. Plans are underway to put an archive of past newsletters online.

I invite members to visit the site and explore its features. Suggestions from members are always welcome. The links page in particular can be expanded. Send all suggestions to webmaster@libotanical.org.

Donald House, an amateur botanist, has been a member of LIBS since 1993. He has an M.A. in Music from Long Island University.

Plant Sightings

Barbara Connolly noted, on April 11, that skunk cabbage (*Symplocarpus foetidus*) in Shu Swamp is thriving. Marsh marigold (*Caltha palustris*) is in full bloom while trout lily (*Erythronium americanum*) and spring beauty (*Claytonia virginica*) are just beginning.

Andy Greller reported that he has found pipsissewa (*Chimaphila umbellata*) scattered under an acre of pine trees at the Iselin Preserve in Matinecock, Nassau County. He also discovered four patches of May-apple, *Podophyllum peltatum*, growing vigorously. Three are circular patches in a field being maintained by once-a-year mowing. The other patch is in a woodland ravine near a fence. *Podophyllum* is not considered native to Long I.

Rich Kelly found *Lycopodium clavatum* (running clubmoss) at the Muttontown Preserve, north of the glacial kame.

Carol Johnston reported European dogtooth violet, *Erythronium dens-canis*, in Coffin Woods recently. Since there is a persistent group of about 30 plants, it will be added to the Atlas.

On May 9, John Potente announced that Elsa L'Homme-dieu's *Platanthera lacera* (ragged fringed orchid) is just emerging from the ground in his yard in Smithtown.

Ray Welch notes that the *Calycanthus floridus* (sweetshrub) that he found at Blydenburgh Park doesn't look planted. It will be added to the Atlas.

Skip Blanchard has found a vetch new to New York with paired purple flowers, *Vicia lathyroides* (spring vetch), on Smithtown Bypass, at the edge of Mt. Pleasant Road, and

also at the edge of the shagbark hickory site near Ridge. Andy Greller reported that he had found it at Caumsett and that it is in the Flora of Caumsett.

Barbara Connolly announced that the Siberian geranium (*Geranium sibericum*) is alive and well in the Coffin Woods Preserve along with the goatsbeard (*Aruncus dioicus*) and the *Galax urceolata* (beetleweed). The latter was supporting 14 blooms.

Garlic mustard (*Alliaria petiolata*) has been in the news lately. Eric Lamont reported that this plant is now appearing in a woodland in Riverhead for the first time. Marilyn Jordan urges all to pull up garlic mustard wherever they see it.

Andy Greller reports that at Fox Hollow Preserve in Syosset, he found an entire hillside of dead and dying mountain laurels (*Kalmia latifolia*)!

In May and June, experts from the Peconic Estuary Program, The Nature Conservancy, and the New York State Department of Environmental Conservation joined local residents, fishermen, and canoeists to hand-pull water primrose (*Ludwigia peploides*), a newly discovered invasive plant that is threatening the Peconic River ecosystem. Native to South America, water primrose was first seen in Peconic Lake on the Peconic River in 2003. Since that point, it has spread three miles downstream to Grangebél Park in downtown Riverhead. Mysteriously, it has been found in only one other location on Long Island—Prospect Park in Brooklyn.



Field Trips

SATURDAY, JULY 29, 2006, 9:30 A.M.

Avalon Preserve, Stony Brook, Suffolk County, New York

Trip Leader: Ray Welch

The preserve is a mixture of meadows and woods, the meadows very full of both planted and native species, and the darn yellow composites are very vigorous at this time of year in the meadows. We will be helping to add to the list of plants at the site.

Directions: Meet at the Stony Brook Grist Mill. Call Ray for information.

SATURDAY, AUGUST 12, 2006, 10 A.M.

Clayton Pinetum, William Cullen Bryant Preserve of Nassau County, Roslyn Harbor, New York

Trip leaders: Andy Greller and Jean Henning

We will visit the historical Childe Frick collection of northern hemisphere conifers (Clayton Pinetum, originally planted with about 25 genera and 190 species; plus a later planting of approximately 30 species of ferns), with an eye toward confirming/updating records of several champion trees.

Directions: L.I.E. Exit 39 (Glen Cove Road), go north about a mile and a half to Route 25A. Turn left on 25A, go about 400 yards, and look for the large sign to Nassau County Museum of Art. This is on the right and immediately east of the viaduct over Roslyn Harbor/Hempstead Bay. Turn right under LIRR trestle and, following traffic arrows, bear to the left for about 200 yards to the entrance of the large, main parking field. Meet in the northeast corner of the main parking lot, an area that is immediately west of the entrance pathway to the Childe Frick Mansion.

SUNDAY, AUGUST 20, 2006, 10 A.M.

Pelham Bay Park, Bronx County, New York

Trip Leader: Dave Künstler

We will visit The Meadow with northern gama grass (*Tripsacum dactyloides*) and narrow-leaved mountain-mint (*Pycnanthemum tenuifolium*). We may also visit a rare, towering old-growth oak-tulip tree forest and woodland and giant sunflowers (*Helianthus divaricatus*, *H. giganteus*) if we have time. A Park plant & fungi list is available for participants. This is a joint trip with Torrey Botanical Society.

Directions: Bruckner Expwy./New England Thruway/I-95 to Orchard Beach/City Island Exit 8B and follow signs to Orchard Beach OR Hutchinson River Pkwy. to Orchard Beach/City Island or Pelham

Pkwy. East exits and follow signs to Orchard Beach. Park in the northeast corner (far left from booths) Orchard Beach parking lot. Parking fee probably \$8. A map with directions is available from Dave: NYC Dept. of Parks & Recreation, Van Cortlandt & Pelham Bay Parks Administrators' Office, 1 Bronx River Pkwy., Bronx, NY 10462; 718-430-4684; david.kunstler@parks.nyc.gov.

SATURDAY, AUGUST 26, 2006, 10 A.M.

Appalachian Trail, Dutchess County, New York

Trip leaders: Skip Blanchard and Rich Kelly

We will walk a short distance towards Maine, then back-track towards Georgia, with the hope of seeing a diverse flora in pastures, overgrown fields, edges, marshlands, streams, and upland forest. Target species will include *Carduus acanthoides*, *Rudbeckia triloba*, *Lobelia siphilitica*, and *Geranium sibiricum*. Bring lunch and plenty of water, and be advised that there are no facilities on site. Some of the walk will be uphill, but the conditions underfoot are easy. You will be required to scale two wooden stiles to climb over fences. You must call either leader in advance to advise if you will be coming.

Directions: Take Route 684 north through Westchester County. As 684 ends, continue straight and you will run right into Route 22. Stay on 22 north all the way through Putnam County. Enter Dutchess County, pass by the town of Pawling, then watch for River Road on the left as a landmark. About 2/3 mile past River Road watch for the sign with the hiker symbol where the Appalachian Trail crosses Route 22. This is just past the Appalachian Trail Railroad station of Metro North on the left. Immediately past the AT, there are large, obvious parking areas on both sides of the road. If you get to the town of Wingdale, you missed it. Driving time from western Nassau County is about 90 minutes.

SATURDAY, SEPTEMBER 16, 2006, 9:30 A.M.

Hempstead Plains, Uniondale, Nassau County, New York

Trip Leader: Betsy Gulotta

We will tour the 19-acre parcel of Hempstead Plains on the campus of Nassau Community College, observing (hopefully) the sandplain gerardia (*Agalinis acuta*) and other fall-blooming forbs and grasses. The visit will include a brief history of the Hempstead Plains and the management efforts of the Friends of the Hempstead Plains to date. We also plan to visit the other County-owned parcel across from the Marriott Hotel. Wear long pants and sturdy shoes or boots, and bring binoculars. (*Directions on next page.*)

More Field Trips



More Field Trips ...

Directions to Hempstead Plains: From Meadowbrook Parkway, either North or South, take Exit M4 and follow signs for the Coliseum and Charles Lindbergh Blvd. Take the first right turn from Charles Lindbergh Blvd. into the NCC East Parking Area, go to stop sign, and you will see the sign for the Hempstead Plains in front of you. Park along fence, near entrance gate.

SATURDAY, SEPTEMBER 30, 2006, 10 A.M. – 4 P.M.

Muttontown Preserve, Oyster Bay, Nassau County, and Caumsett State Park, Huntington, Suffolk County, New York
Trip leaders: Andy Greller and Al Lindberg

This is a workshop focused on the identification of oak and hickory species. Join in hiking the oak woods of central Long Island to collect and identify specimens of oaks and hickories that are expected to be in fruit at this time. We will meet at the Muttontown Preserve. From there we will proceed to Caumsett State Park, Huntington by bus or van, where we will collect leaf, stem, and fruit specimens from the many species of oaks and hickories. We will have lunch at Caumsett, and then return to Muttontown Preserve to study the Caumsett collections and to search for local specimens. We expect to find ten oaks and four hickories. We will have available herbarium specimens, Riker mounts, and drawings of the species. You are encouraged to bring your own field guides, hand lenses, and binoculars. Dress appropriately for the weather. Long sleeves and long pants are recommended, as are sturdy shoes or hiking boots; tick repellent is advised. Bring lunch and a liquid. This is a joint trip with the Torrey Botanical Society. Please notify Andy if you plan to attend.

Directions: Meet at the Bill Paterson Nature Center at Muttontown Preserve.

Letters to the Editor, Articles, and News

items may be submitted to:
Margaret Conover
Long Island Botanical Society
PO Box 507
Aquebogue, NY 11931



Upcoming Programs

September 12, 2006*

Tuesday, 7:30 p.m.

MANUEL LERDAU: "WAS REAGAN RIGHT - DO TREES CAUSE AIR POLLUTION?"

This presentation will be about the influence of plants on atmospheric chemistry and air quality. Manuel is a professor of Ecology and Evolution, as well as professor at the Institute for Terrestrial and Planetary Atmospheres of the Marine Science Research Center, both at SUNY Stony Brook.

Location: Museum of Long Island Natural Sciences,
Earth and Space Science Building,
Gil Hanson Room (Room 123)
SUNY at Stony Brook, Stony Brook

October 10, 2006*

Tuesday, 7:30 p.m.

STEVEN CLEMANTS: "WILDFLOWER STORIES"

A discussion of the ecology and biology of wildflowers. Steve is VP of Science at the Brooklyn Botanic Garden and first author of the recently published (2006) *Wildflowers in the Field and Forest*.

Location: Bill Paterson Nature Center,
Muttontown Preserve, East Norwich

* Refreshments and informal talk begin at 7:30 p.m.
Formal meeting starts at 8:00 p.m.

Join LIBS today!

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